

## CLAIMS

1. A method for managing computer processing functions in a multi-processor computer environment, said multi-processor computer environment including at least one standard logical processor and at least one assist logical processor, each of which share a single operating system instance within a single logical partition, said method comprising:

invoking a switch-to service by standard code running on a standard logical processor, said standard code executing a task;

wherein said switch-to service performs:

checking to see if an assist logical processor is online;

if said assist logical processor is online:

updating an integrated assist field of a work element block associated with said task operable for indicating said task is eligible to be executed on said assist logical processor; and

assigning a work queue to said work element block;

if no assist logical processors are online:

updating said integrated assist field of said work element block associated with said task operable for indicating said task is eligible to be executed on an assist logical processor when said assist logical processor becomes online;

dispatching said task in accordance with business rules identified in a system control block;

executing said task by assist code running on said assist logical processor;

wherein said work element block includes:

a chain pointer;

a priority field; and

said integrated assist processor field.

2. The method of claim 1, further comprising:

invoking a switch-from service by said assist code upon completing an operation associated with said task, said invoking a switch-from service operable for returning control of executing said task to said standard code.

3. The method of claim 1, further comprising disabling said assist logical processor if said operating system instance cannot distinguish said assist logical processor from said standard logical processor.

4. The method of claim 1, further comprising:

monitoring system resources associated with said assist logical processor; and  
reporting results of said monitoring to said operating system instance.

5. The method of claim 1, wherein said switch-to service further performs authorization of said standard code before said checking to see if said assist processor is online, said authorization operable for verifying whether said standard code is authorized to call said switch-to service;

wherein said switch-to service returns a failure code to an unauthorized standard code; and

wherein further, said standard code and assist code are defined by at least one of a:

hardware policy;

system administrator;

operating system manufacturer;

processor functionality;

processor speed;

cost considerations; and

business needs.

6. The method of claim 1, wherein:

if said assist logical processor is online, said switch-to service notifies said standard code by setting a return code to success; and

if no assist logical processors are online, said switch-to service notifies said standard code by setting a return code to warning.

7. The method of claim 1, wherein said switch-to service identifies online assist processors by accessing an integrated assist processor mask in a system control block associated with said operating system instance.

8. The method of claim 1, wherein said dispatching includes checking said system control block operable for identifying a type of processor said dispatch component is running on.

9. The method of claim 1, wherein said system control block includes fields operable for establishing rules for determining an extent to which said standard logical processor is permitted to execute assisted work, said system control block including a crossover field operable for permitting or prohibiting a standard logical processor to perform assisted work.

10. The method of claim 9, wherein said system control block further includes an honorpriority field operable for directing said standard logical processor to perform assisted work before performing standard work only if said assisted work has a higher priority than said standard work; wherein said honorpriority field is set to ON and said crossover field is set to ON.

11. The method of claim 10, wherein said system control block further includes a priority\_bar field operable for setting a threshold for assisted work;

wherein a priority set for standard work is compared to a priority set for assisted work; and wherein further:

if said priority set for standard work is higher than said priority set for assisted work, said standard work is performed before said assisted work is performed;

if said priority set for standard work is less than or equal to said priority set for assisted work, then said threshold set for said priority\_bar is compared to said priority set for said standard work; wherein further:

if said priority set for standard work is lower than said threshold:

said assisted work is performed before said standard work is performed; and

if said priority set for standard work is equal to or greater than said threshold, said standard work is performed before said assisted work is performed;

wherein said crossover field is set to ON, said honorpriority field is set to ON, and said priority\_bar field is set to a priority threshold.

12. A system for managing computer processing functions in a multi-processor computer environment, comprising:

at least one standard logical processor;

at least one assist logical processor sharing a same logical partition as said at least one standard logical processor;

a single operating system instance associated with said logical partition, said single operating system instance including a switch-to service and a switch-from service; and

a dispatch component managed by said single operating system instance;

wherein upon invoking said switch-to service by said standard code, said switch-to service performs:

checking to see if an assist logical processor is online;

if said assist logical processor is online:

updating an integrated assist field of a work element block associated with said task operable for indicating said task is eligible to be executed on said assist logical processor; and

assigning a work queue to said work element block;

if no assist logical processors are online:

updating said integrated assist field of said work element block associated with said task operable for indicating said task is eligible to be executed on an assist logical processor when said assist logical processor becomes online.

13. The system of claim 12, wherein invoking said switch-from service causes said task to be dispatched on a standard processor the next time said task is dispatched.

14. The system of claim 12, wherein said dispatch component performs:

dispatching said task, in accordance with business rules identified in a system control block, on either of said assist logical processor and said standard logical processor; wherein said system control block includes:

a standard logical processor mask;

an assist logical processor mask;

a crossover field;

an honorpriority field;

a priority\_bar field.

15. The system of claim 14, further comprising:

a work element block including:

a chain pointer;

a priority field; and

an integrated assist processor field operable for indicating a processor type; and

a queue; wherein said work element blocks are assigned to said queue in accordance with said integrated assist processor field setting.



16. The system of claim 14, wherein said standard logical processor field indicates whether a standard logical processor is online; and wherein further, said assist logical processor field indicates whether an assist logical processor is online.

17. The system of claim 14, wherein:

said crossover field is operable for permitting or prohibiting a standard logical processor to perform assisted work.;

said honorpriority field is operable for directing said standard logical processor to perform assisted work before performing standard work only if said assisted work has a higher priority than said standard work; and

said priority\_bar field is operable for setting a threshold for specifying conditions in which assisted work may be performed before standard work is performed when said assisted work has a higher priority than said standard work.

18. The system of claim 12, further comprising a READ SCP information service call operable for identifying online processors and communicating online status of said online processors to said operating system instance.

19. The system of claim 12, further comprising a system utilization component operable for monitoring system resources associated with said assist logical processor and reporting results of said monitoring to said operating system instance.

20. A storage medium including machine-readable computer program code for managing computer processing functions in a multi-processor computer environment, said multi-processor computer environment including at least one standard logical processor and at least one assist logical processor, each of which share a single operating system instance within a single logical partition, said storage medium including instructions for causing a computer to implement a method, comprising:

invoking a switch-to service by standard code running on a standard logical processor, said standard code executing a task;

wherein said switch-to service performs:

checking to see if an assist logical processor is online;

if said assist logical processor is online:

updating an integrated assist field of a work element block associated with said task operable for indicating said task is eligible to be executed on said assist logical processor; and

assigning a work queue to said work element block;

if no assist logical processors are online:

updating said integrated assist field of said work element block associated with said task operable for indicating said task is eligible to be executed on an assist logical processor when said assist logical processor becomes online;

dispatching said task in accordance with business rules identified in a system control block associated with said task;

executing said task by assist code running on said assist logical processor;

wherein said work element block includes:

a chain pointer;

a priority field; and

said integrated assist processor field.